Having thus described the preferred embodiments, what is claimed is:

1. A hinge for use in a micro-assembly employing electrical power supplied from an electrical power source, the hinge comprising:

a silicon-on-insulator wafer including a bottom substrate layer, a middle buried oxide layer and a single crystal silicon device layer;

a ribbon hinge structure formed in the device layer of the silicon-on-insulator wafer, wherein the ribbon hinge structure is flexible and capable of movement out of the plane of the device layer; and

an electrical conductor carried on at least a portion of a surface of the ribbon hinge.

2. The invention according to claim 1 wherein the out-of-plane device is fabricated from a silicon-on-insulator wafer which has an initial uniform device layer thickness.

3. The invention according to claim 1 wherein the ribbon is configured with a mechanical integrity which permits application of a side-twisting mechanical torque sufficient to twist the ribbon hinge to 90° or more from an initial 0° twisted position.

4. The invention according to claim 1 wherein the ribbon structure has at least one of a width or thickness which is less than at least one of a width or thickness of the out-of-plane device.

5. The invention according to claim 1 wherein the ribbon hinge has at least one of (i) an isolation region formed within the ribbon hinge, and within which is deposited the electrical conduction material, or (ii) an area of insulation material which has been deposited and then patterned on the ribbon hinge area, wherein conductors can then be placed on top of the insulator material.

6. A micro-assembly comprising:

a micro-device formed on or in the device layer of a single crystal silicon substrate;

a ribbon hinge formed on the device layer, the ribbon structure having been thinned to a thickness which is less than the thickness of the micro-device;

a connection interface providing a connection point between a first end of the out-of-plane device and a first end of the ribbon hinge; and

an electrical conductor material extending along the ribbon structure toward the micro-device.

7. The invention according to claim 6 further including an anchor portion holding one end of the ribbon hinge in a secure position.

8. The invention according to claim 7 where the anchor portion is formed with an isolation groove, within which is deposited the isolation region of the anchor portion.

9. The invention according to claim 6 wherein the micro-device includes an isolation region, formed within the micro-device, and in which the electrical conductive material is deposited.

10. The invention according to claim 6 further including an isolation region formed within the ribbon hinge, and within which is deposited the electrical conductive material.

11. The invention according to claim 6 wherein the device layer is formed as part of a silicon-on-insulator wafer, including at least the device layer and a buried oxide layer.

12. The invention according to claim 6 wherein the ribbon structure has at least one of a width or thickness which is less than at least one of a width or thickness of the out-of-plane device.

13. The invention according to claim 6 wherein the out-of-plane device is fabricated from a silicon-on-insulator wafer which has an initial uniform device layer thickness.

14. The invention according to claim 6 wherein the ribbon hinge is configured with a mechanical integrity which permits application of a side-twisting mechanical torque to the out-of-plane device sufficient to twist the out-of-plane device to 90° or more from an initial 0° twisted position.

15. The invention according to claim 6 wherein the ribbon hinge is configured with a mechanical integrity which permits application of a lifting out-of-plane mechanical torque to lift the out-of-plane device from 0° which is in the horizontal plane, to 90° or more out of the horizontal plane.